The art and science of scientific writing

Mestres, Carlos A ; Sampathkumar, Arkalgud

DOI: https://doi.org/10.1177/0218492319856972

Editorial

ASIAN CARDIOVASCULAR & THORACIC ANNALS

The art and science of scientific writing

Asian Cardiovascular & Thoracic Annals
2019, Vol. 27(5) 335–337

DOI: 10.1177/0218492319856972
journals.sagepub.com/home/aan
SAGE

Carlos A Mestres[1] and Arkalgud Sampathkumar[2]

Publishing a scientific paper is not just creating a manuscript. It is an art in the first part and science in the second. Publishing in scientific journals is a way to networking within the community. It is also useful to improve scientific knowledge. Scientific publishing has become almost an obligation in the medical field as it is currently seen from different perspectives. For authors as it substantially contributes to improve the *curriculum vitae*. For the referees who must produce as solid and honest reviews as possible For the editors, who are responsible for the final quality of the article published. Publishing may eventually become a matter of professionalism.[1] On the other hand, there is a competition among authors, which translates in myriads of contributions with different degrees of quality. For those willing to embrace publishing as part of their academic careers, a scientific paper needs to be understood in full, from the basic structure, currently well acknowledged, to its delivery to the readership.[2]

Building a scientific contribution is a complex process, from the inception of the idea, to the practical execution at the time of writing and finally to the publication of the paper in the given scientific journal. Complexity is related to the structure of the paper, which contemplates a number of accepted sections and to time required to write it once the design is confirmed and the data are available for analysis. The decision-making process on how to conceptualize and execute a scientific paper has been addressed in the literature from multiple perspectives and every section of a paper has been surgically dissected.[3–5] The following is a refreshing elaboration on the two major components of writing a scientific paper for better understanding and execution, from the perspective of the editor.

The Art

Involves acquiring a sound English vocabulary. Most authors fail here. If necessary seek for advice from someone proficient. The second important aspect is hard work. You need to read the instructions to authors carefully and meticulously. Not all journals have common or identical instructions. Instructions for authors should then be checked in the corresponding journal site.[6] One can select an appropriate journal depending on the scope and the subject you wish to publish. A wrong selection usually means rejection. Brevity is another art, very essential for successful publication. Learn to be brief and to the point. All journals have word, page and references restrictions. This includes characters in the title, number of authors, affiliation etc. readers first see the title, if it is attractive they read the abstract and if it is interesting they will read your full Manuscript. Organization of thought, data and navigation are parts of the art. One must first collect the data and confirm which the design of the study is. Is it prospective? Or retrospective? Or is randomized?. If it involves patients, Ethical clearance is essential nowadays. Inclusive dates is necessary. Keep away from fraud. Remember, duplicate publication, salami publication, plagiarism, data fraud are all easily detectable and are serious offences. This is a serious problem in research and there is ample literature on this topic.[7–11] The Committee on Publication Ethics (COPE) literally describes its objectives as it is committed to educate and support editors, publishers and those involved in publication ethics with the aim of moving the culture of publishing towards one where ethical practices becomes the norm, part of the publishing culture.[12] The Asian Cardiovascular and Thoracic Annals also stressed on this problem and joined the international editor's statement in Cardiothoracic Surgery.[13]

Gratitude

Be grateful to contributors, donors, grant/granting institutions and add disclosures. Remember all authors must be contributors. Courtesy(Ghost) authorship (HOD) is not permissible. All authors must sign a

[1]Senior Consultant, University Hospital, Ramistrasse 100, Zurich, Switzerland
[2]Senior Consultant, Max Superspeciality Hospital, New Delhi, India

Corresponding author:
Arkalgud Sampathkumar, Senior Consultant, Max Superspeciality Hospital, Tower 12, Flat 102, CWG Village, Noida Crossing, New Delhi 110092, India.
Email: asmpath_kumar@hotmail.com

contributor form individually. Assistants can be included in acknowledgement. Every article needs to have a minimum number of subjects (patients). Consult/include a statistician as author or contributor. Biostatistics is a specialty. Your reputation precedes you. Do not cook up data, multiply numbers. It will be easily detectable and reviewers are asked if they believe the data. Uniformity: Remember changing only one parameter in a comparison study provides the best evidence. Today all publications are evidence-based. There is no place for worthless banter. Do not present the data in two different forms (text/tables/figures) in the same manuscript.

The field of gratitude, expressed through acknowledgments, is also a complex topic to discuss as it involves different relationships. There is also an individual variability as per acknowledgment and different categories have been identified in the literature. The science of acknowledgement is not to be neglected and represents an additional benefit for impactful publications.[14]

The Science

If you read journals you will notice different types of articles, Original articles, Case reports, Images, Reviews, Editorial, comments etc. Select the appropriate category for your Manuscript. Almost all Manuscripts follow the ***IMRAD*** style: **I**ntroduction, **M**aterial/Methods, **R**esults **A**nd **D**iscussion. Organize your Manuscript under these heads. Spend time and write, rewrite, correct, check word limit, include limitations of your study, acknowledgement. Answer the following questions: what did you do, why did you do it, what did you find. ***IMRAD*** has been out there for long time and the vast majority of journals do follow this structure for almost fifty years now.[15,16]

Title

Should be brief and to the study. It should attract the readers' attention.

Authors

Stick to author limits. Include first name, last name, highest degree etc. If authors are from different departments or institutions add hyperlinked numbers and explain them. The Corresponding author's name and contact details must be provided. As a general rule the first author has contributed the most. The last author is usually a senior author who planned, performed and mentored the study.

Authorship in scientific contributions is a very serious issue. Authorship recognizes the individual contribution to a given research. Assigning authorship is a more complex task than it is generally understood. Authorship recognizes creativity, collaboration, integrity and accountability.[17] Furthermore, authorships should be a practical exercise of honesty. Ghost authorship must be discouraged. The World Association of Medical Editors (WAME) has recognized criteria for authorship.[18–20]

Abstract

Here, art is very essential. A good abstract should be structured. Objective, Methods, Results and Conclusion. It should be a brief description of the entire Manuscript. Remember to add keywords (at last 3, Look up MESH in Index Medicus). Stick to 250-word limit, as most of the journals recommend.

Methods

Materials and methods if a laboratory investigation and patients and methods if a clinical investigation. Do not mix up. Describe in simple English exactly what you have done, how you collected the data. What method was used for statistical analysis? What is the period of study, Inclusion and exclusion criteria and any other relevant information pertaining only to methods? Describe the surgical procedural details, who has done the surgery?, was it one or multiple institutions?. Were there any variations in technique and deviations from protocol.

Results

State clearly the outcomes, give correct numbers organize in table or figure form (preferably one only), explain pictures, annotate property. Evidence in best seen. Do not leave out negative outcomes. Learn the terms mortality, late mortality, adverse effects, and complications etc. Add statistical analysis. Define what is significance, survival, event free survival, reoperation free survival etc. (Read guidelines for reporting results).

Discussion

This should highlight your observation in the light of current practice. Discuss advantages, disadvantages without bias. All reviewers knows how important your work is, but it should bring out some new knowledge. Do not claim to be first (even you think you are) someone else has done or attempted it before and it negatively impacts the reviewers. Avoid self-aggrandizement. Simply state facts and offer scientific evidence and logical explanation. Do not belittle or criticize published data especially from reputed

institutions. Do not prolong discussion. Acknowledgements, limitations of study are part of text.

References

Learn the Vancouver style of citation.[21] See any journal. Use correct journal abbreviation. Number them in order of appearance in the text. Cite them in the text with superscripted numbers. Keep to journal limits of each type of Manuscript. Do not include only your publications. Use the English language literature search under the subject and choose the most appropriate. Do not copy full sentences of paragraphs, even if you cite them (even if it is your own previous publication). A successful Manuscript undergoes at least 6 drafts before it is submitted. All authors must see, correct and approve the Manuscript. Submit and receive an acknowledgement. Keep a copy (soft or printed) of the entire Manuscript. Do not be disappointed if it is rejected. Read the comments, correct and resubmit. Publish periodically and improve your bibliography. Over the past forty years, the Vancouver style has been embraced by almost every scientific journal in Medicine. It aimed at increasing uniformity in referencing.[22] Worth understanding why it is useful and authors should always check with the individual journal's instructions for authors.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. Inglis JR. Careers in science publishing. *Cold Spring Harb Perspect Biol* 2019; 11. Epub ahead of print 1 Match 2019. doi: 10.1101/cshperspect.a032979.
2. Meo SA. Anatomy and physiology of a scientific paper. *Saudi J Biol Sci* 2018; 25: 1278–1283.
3. Bavdekar SB and Gogtay NJ. Writing an abstract for a research manuscript: providing an honest, succinct and complete summary. *J Assoc Physicians India* 2015; 63: 64–67.
4. Auvinen A. How do I write a scientific article: advice to a young researcher. *Duodecim* 2016; 131: 1460–1466.
5. Bajwa SJ and Sawhney C. Preparing manuscript: scientific writing for publication. *Indian J Anaesth* 2016; 60: 674–678.
6. https://journals.sagepub.com/toc/aana/current.
7. Gwilym SE, Swan MC and Giele H. One in 13 'original' articles in the *Journal of Bone and Joint Surgery* are duplicate or fragmented publications. *J Bone Joint Surg Br* 2004; 86: 743–745.
8. Helgesson G and Eriksson S. Plagiarism in research. *Med Health Care Philos* 2015; 18: 91–101.
9. Wang T, Xing QR, Wang H, et al. Retracted publications in the biomedical literature from open access journals. *Sci Eng Ethics*. Epub ahead of print 7 March 2018. DOI: 10.1007/s11948-018-0040-6.
10. Sweedler J. Salami publications and duplicate submissions: put them on your list of things to avoid. *Anal Chem* 2019; 91: 3177–3178.
11. Goodman D, Ogrinc G, Davies L, et al. Explanation and elaboration of the SQUIRE (Standards for Quality Improvement Reporting Excellence) Guidelines: examples of SQUIRE elements in the healthcare improvement literature. *BMJ Qual Saf* 2016. pii: bmjqs-2015- 004480.
12. https://publicationethics.org.
13. Kumar AS, Beyersdorf F, Lazar HL, et al. Joint statement on redundant (duplicate) publication by the Editors of the undersigned cardio-thoracic journals. *Asian Cardiovasc Thorac Ann* 2015; 23: 773.
14. Giles CL and Councill IG. Who gets acknowledged: measuring scientific contributions through automatic acknowledgment indexing. *Proc Natl Acad Sci USA* 2004; 101: 17599–17604.
15. Huth EJ. Structured abstracts for papers reporting clinical trials. *Ann Internal Med* 1987; 106: 626–627.
16. Sollaci LB and Pereira MG. The introduction, methods, results, and discussion (IMRAD) structure: a fifty-year survey. *J Med Libr Assoc* 2004; 92: 364–367.
17. Patience GS, Galli F, Patience PA, et al. Intellectual contributions meriting authorship: Survey results from the top cited authors across all science categories. *PLoS One*. *Epub ahead of print 16 January* 2019; 14: e0198117. DOI: 10.1371/journal.pone.0198117.
18. World Association of Medical Editors. Authorship; 2007 [cited 14 March 2018], http://www.wame.org/policy-statements#Authorship.
19. Marco CA and Schmidt TA. Who wrote this paper? Basics of authorship and ethical issues. *Acad Emerg Med* 2004; 11: 76–77.
20. Menezes RG, Kanchan T, Arun M, et al. Authorship: an ethical issue. *Natl Med J India* 2006; 19: 111–112.
21. International Steering Committee of Medical Editors. Uniform requirements for manuscripts submitted to biomedical journals. International Steering Committee of Medical Editors. *Br Med J* 1978; 1: 1334–1336.
22. Vancouver style. *Br Med J* 1980; 280: 3.